

SUMMARY OF INSPECTION LOGS

Quarter October '98 - December '98

Facility: Glaze Basin Cap **Type:** Asphalt Paving

Inspections: Monthly **Required:** Monthly

Repairs/Maintenance: None

Condition: Cap is intact with no breaks or cracks in asphalt noted.

Remarks: None

Facility: Slip Mound Cap **Type:** Membrane with soil and vegetative cover - mounded

Inspections: Monthly **Required:** Monthly

Repairs/Maintenance: None

Condition: Vegetative cover is in good condition and no erosion was noted. Protective guardrail in good condition.

Remarks: None.

Facility: Nine (9) RCRA Monitoring Wells **Type:** N/A

Inspections: Monthly **Required:** Monthly

Repairs/Maintenance: None

Condition: All wells in good condition.

Remarks: . Sampled MW's 1, 3, 4, 6, 9 and 10 in July.

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SUMMARY OF INSPECTION LOGS

Quarter October '98 - December '98

Facility: Seven (7) Recovery Wells **Type:** N/A

Inspections: Monthly **Required:** Monthly

Repairs/Maintenance: None

Condition: All wells intact and secure. One well, RW-1, not in use.

Remarks: None

Facility: Polishing Basin **Type:** N/A - Closed

Inspections: Monthly **Required:** Monthly

Repairs/Maintenance: N/A

Condition: Clean closed. Vegetative cover is in place, no erosion noted.

Remarks: None.

Facility: Tilton Pond **Type:** Earth Dike, Unlined

Inspections: Three times per day **Required:** Monthly

Repairs/Maintenance: None.

Condition: Vegetative cover on berms is in good condition and no erosion was noted. No industrial waste discharge to pond since August 1992. No overtopping controls required as pond is permitted to discharge non-contact cooling water and stormwater to surface water under NJPDES-DSW Permit #0005177.

Remarks: None.

SUMMARY OF INSPECTION LOGS

Quarter October '98 - December '98

Facility: Sludge Disposal Area **Type:** Asphalt Paving

Inspections: Monthly **Required:** No

Repairs/Maintenance: None.

Condition: Cap is intact with no open cracks.

Remarks: None.

Facility: Area of Concern **Type:** Asphalt Paving, Membrane Cap & Fence

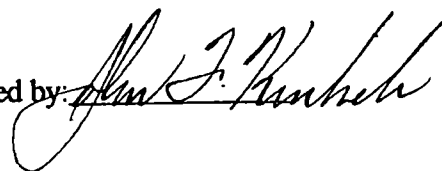
Inspections: Monthly **Required:** No

Repairs/Maintenance: None

Condition: Asphalt and fence in excellent condition.

Remarks: None

Prepared by:



Date: 12-23-98

LENOX CHINA
A DIVISION OF LENOX, INC.
POMONA, NEW JERSEY

POMONA DGW AND TCE
QUARTERLY GROUNDWATER
MONITORING REPORT
OCTOBER 1998 MONITORING ROUND

PROJECT #35221.001
DECEMBER 1998

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1.0 INTRODUCTION

This report summarizes the groundwater monitoring programs which are performed to satisfy the requirements outlined in Lenox's NJPDES Discharge to Groundwater (DGW) Permit (permit number NJ0086487) and the Memorandum of Agreement (MOA) between Lenox and NJDEP. All groundwater monitoring and analytical procedures were conducted in accordance with the protocols outlined in the Groundwater Sampling and Analysis Plan (GWSAP) and Supplemental Groundwater Sampling and Analysis Plan (SGWSAP) approved by NJDEP at the time the samples were collected.

This report was formatted so that the groundwater monitoring data generated during the DGW and MOA sampling programs are presented as a single report. The report components are as follows:

- Detection Monitoring Program
- GAC Treatment System Monitoring Program
- Depth to Water and Groundwater Elevation Measurements
- TCE Monitoring Program
- SWMU No. 2 and Area of Concern Monitoring Program
- Classification Exception Area/Statistical Analysis Program

The first three items satisfy the monitoring requirements outlined in the DGW permit with the remaining items covered by the MOA.

2.0 DETECTION MONITORING PROGRAM (DGW)

The detection monitoring program is covered by the GWSAP and consists of the following:

- Sampling monitoring wells MW-1, MW-3, MW-4, MW-6, MW-9, MW-10; and
- Analyzing the samples for color and total and dissolved lead and zinc.

The groundwater analytical data are summarized in Table 1. The laboratory data reports are included in Appendix C.

The October 1998 quarterly monitoring round results for the detection monitoring program are summarized below:

- Lead was detected in the filtered sample collected from MW-3 ($12.8 \mu\text{g/l}$). Lead was not detected in any other filtered sample. Lead was detected in the unfiltered sample from MW-1 ($3.0 \mu\text{g/l}$), MW-3 ($78.8 \mu\text{g/l}$), and MW-4 ($4.4 \mu\text{g/l}$). Lead was not detected in any other unfiltered sample.
- Filtered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 20.0 to $3,340 \mu\text{g/l}$. Zinc was detected at the highest concentration in a filtered sample collected from well MW-3. Unfiltered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 20.0 to $3,500 \mu\text{g/l}$. Zinc was detected at the highest concentration in an unfiltered sample collected from well MW-3.

- Color was detected in the samples at concentrations ranging from less than 5 to 80 CU units. Color was detected at the highest concentration in a sample collected from well MW-1.

LENOX CHINA
POMONA, NEW JERSEY

TABLE 1

GROUNDWATER CHEMISTRY DATA, OCTOBER 1998

Parameter	Units	MW-1	MW-3	MW-2 (MW-3 Dup)	MW-4	MW-6	MW-9	MW-10	Field Blank 10/5/98	Trip Blank 10/5/98
Temperature, Field	°C	15.2	22.0	22.0	20.4	16.4	19.0	17.2	-	-
pH, Field	pH units	5.10	6.50	6.50	6.16	4.96	6.84	5.85	-	-
Specific Conductance @ 25°C	umhos/cm	40.3	527	527	462	459	987	715	-	-
Oxygen, Dissolved	ug/l	0	5,400	5,400	5,100	2,200	800	2,900	-	-
Total Suspended Solids	ug/l	88,000	-	-	-	-	-	14,000	< 4000	-
Total Dissolved Solids	ug/l	71,000	-	-	-	-	-	222,000	< 10000	-
Nitrite-Nitrogen	ug/l	-	-	-	-	-	-	-	-	-
Nitrate-Nitrogen	ug/l	-	-	-	-	-	-	-	-	-
Ammonia-Nitrogen	ug/l	-	-	-	-	-	-	-	-	-
Phosphorus, Total as P	ug/l	-	-	-	-	-	-	-	-	-
Total Organic Carbon	ug/l	-	-	-	-	-	-	-	-	-
Color	CU units	80	20	5	5	5	60	35	5	-
Odor	T.O.N.	-	-	-	-	-	-	-	-	-
Sulfate	ug/l	-	-	-	-	-	-	-	-	-
Iron, Dissolved	ug/l	438	-	-	-	-	-	538	-	-
Lead, Dissolved	ug/l	< 3.0	12.8	12.4	< 3.0	< 3.0	< 3.0	< 3.0	-	-
Manganese, Dissolved	ug/l	-	-	-	-	-	-	-	-	-
Sodium, Dissolved	ug/l	-	-	-	-	-	-	-	-	-
Zinc, Dissolved	ug/l	< 20	3,340	3,430	30.7	22.3	< 20	< 20	-	-
Chromium, Dissolved	ug/l	-	-	-	-	-	-	-	-	-
Iron, Total	ug/l	1,640	-	-	-	-	-	3,180	-	-
Lead, Total	ug/l	3.0	78.8	71.2	4.4	< 3.0	< 3.0	< 3.0	-	-
Manganese, Total	ug/l	-	-	-	-	-	-	-	-	-
Sodium, Total	ug/l	-	-	-	-	-	-	-	-	-
Zinc, Total	ug/l	< 20	3,500	3,400	24.8	30.9	< 20	< 20	< 20	-
Chromium, Total	ug/l	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	ug/l	-	-	-	-	-	-	-	-	-
Chloromethane (2)	ug/l	-	-	-	-	-	-	-	-	-
Bromomethane (3)	ug/l	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	ug/l	-	-	-	-	-	-	-	-	-
Vinyl Chloride	ug/l	< 0.20	-	-	-	-	-	< 0.20	< 0.20	< 0.20
Chloroethane	ug/l	-	-	-	-	-	-	-	-	-
Acrolein	ug/l	-	-	-	-	-	-	-	-	-
Acrylonitrile	ug/l	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/l	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	ug/l	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	ug/l	< 0.20	-	-	-	-	-	< 0.20	< 0.20	< 0.20
1,1-Dichloroethane	ug/l	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene (cis)	ug/l	< 0.20	-	-	-	-	-	3.0	< 0.20	< 0.20
1,2-Dichloroethene (trans)	ug/l	< 0.20	-	-	-	-	-	< 0.20	< 0.20	< 0.20
Chloroform	ug/l	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	ug/l	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	ug/l	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	ug/l	-	-	-	-	-	-	-	-	-
Bromodichloromethane	ug/l	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	ug/l	-	-	-	-	-	-	-	-	-
Trans-1,3-Dichloropropene	ug/l	-	-	-	-	-	-	-	-	-
Trichloroethene	ug/l	< 0.20	-	-	-	-	-	10.3	< 0.20	< 0.20
Dibromochloromethane (4)	ug/l	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	ug/l	-	-	-	-	-	-	-	-	-
Benzene	ug/l	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	ug/l	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	ug/l	-	-	-	-	-	-	-	-	-
Cis-1,3-Dichloropropene	ug/l	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl Ether	ug/l	-	-	-	-	-	-	-	-	-
Bromoform	ug/l	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	ug/l	-	-	-	-	-	-	-	-	-
Tetrachloroethene	ug/l	-	-	-	-	-	-	-	-	-
Toluene	ug/l	-	-	-	-	-	-	-	-	-
Chlorobenzene	ug/l	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/l	-	-	-	-	-	-	-	-	-
Sum of Volatile Organic Compounds	ug/l	< 0.20	-	-	-	-	-	13.3	< 0.20	< 0.20

Notes:

- = Denotes Not Analyzed

(3) - Bromomethane = Methyl Bromide

* - Instrument Malfunction - No Data Collected

(2) - Chloromethane = Methyl Chloride (4) - Dibromochloromethane = Chlorodibromomethane

Values in bold font exceed the site specific Groundwater Quality Criteria (GWQC).

3.0 GAC TREATMENT SYSTEM MONITORING PROGRAM(DGW)

SEMI-ANNUAL EVALUATION

Lenox China installed the GWACS at its Pomona site in accordance with the plans and specifications submitted to the NJDEP in September 1991. Part III, Section I of the Discharge to Groundwater (DGW) permit requires that Lenox conduct a semi-annual evaluation of the GWACS. This is the twelfth, six month operating period since system startup. A summary of the GWACS performance for the June through December 1998 operating period is presented below.

3.1 Description

The GWACS was designed as a closed loop system and consists of a line of recovery wells to extract TCE-contaminated groundwater, a granular activated carbon (GAC) treatment unit, and two shallow reinjection well fields upgradient of the recovery wells to return the treated groundwater to the aquifer.

The feasibility of the GWACS was determined by conducting pilot-scale treatability and recharge tests in August 1991 with preliminary capture well calculations confirmed by controlling aquifer tests in December 1991. The permanent extraction well locations were based on analysis of the aquifer test data.

The total extraction rate of the GWACS is approximately 200 gallons per minute. The extracted water is pumped through underground PVC piping to a dual-vessel GAC unit. The water is discharged, after treatment, to one of the two shallow reinjection well fields at the southwest corner of the Lenox property. Use of the reinjection well fields is alternated every three or four months to maintain recharge capacity.

3.2 Problems Encountered

There were no problems with the GWACS during the June through December 1998 operating period. The carbon was regenerated in the primary vessel in April 1998.

3.3 Groundwater Elevation

A quarterly groundwater monitoring program is performed at the Pomona facility, which includes measuring groundwater elevations and collecting groundwater samples from on-site and off-site monitoring wells in accordance with the SGWSAP approved for the TCE remediation project. Groundwater elevation maps, prepared during the two most recent monitoring rounds (July and October 1998) are shown on Figures 1 and 5.

Groundwater at the site flows northeast towards the recovery wells. The zone of influence created by the recovery wells is reflected by the shape of the groundwater elevation contour near Atlantic Avenue. It is evident that the capture zone created by the extraction wells extends the width of the TCE plumes by comparing groundwater elevation contours to the TCE plume map generated during the same time period. The September and October 1998 groundwater elevation contour maps show that the White Horse Pike wells are within the zone of influence created by the recovery well system.

3.4 TCE Plumes

The extent of the TCE plumes during the July and October sampling rounds are shown on Figures 2 and 6. The plumes are moving towards the extraction well system, and the area containing the highest TCE concentration is being intercepted by the extraction well network.

3.5 GAC Unit Sampling

Groundwater samples collected from the GAC unit are analyzed for TCE, total and dissolved iron, lead, and zinc, TDS, and TSS. The samples are collected from the influent, effluent, and mid-point sampling ports. The analytical results are summarized in Table 1. The laboratory data reports are included in Appendix C. The monthly sampling results are shown in Table 2.

The October 1998 monitoring round results for the GAC unit are summarized below:

- The influent GAC sample contained TCE at a concentration of 21.0 µg/l. The mid-point and effluent GAC samples did not contain TCE at a concentrations greater than the laboratory limit of 0.32 µg/l. Cis-1,2-dichloroethene was detected in the influent sample at a concentration of 0.25 µg/l, in the mid-point sample at a concentration of 0.43 µg/l, and was not detected in the effluent sample at a concentration greater than the laboratory method detection limit of 0.1 µg/l.
- Lead was detected in the unfiltered samples collected from the influent port and mid-point at concentrations of 3.0 µg/l and 2.0 µg/l respectively. Lead was not detected in the unfiltered sample from the effluent sample port at a concentration greater than the laboratory detection limit of 1.0 µg/l. Lead was detected in the filtered sample from the influent port at a concentration of 2.0 µg/l, and was not detected in the filtered samples from the mid-point, and effluent ports at concentrations greater than the laboratory method detection limit of 1.0 µg/l.
- Zinc was detected in the unfiltered samples from the influent, mid-point, and effluent ports at concentrations of 620 µg/l, 20 µg/l, and 80 µg/l, respectively. Zinc was

detected in the filtered samples from the influent, mid-point, and effluent ports at concentrations of 50 µg/l, 10 µg/l, and 20 µg/l, respectively.

- Iron was detected in the unfiltered samples from the influent, mid-point, and effluent ports at concentrations of 1,800 µg/l, 20 µg/l, and 30 µg/l, respectively. Iron was detected in the filtered sample from the influent port at a concentration of 30 µg/l. Iron was not detected in samples from the mid-point or effluent ports at concentrations greater than the laboratory method detection limit of <10 µg/l.
- TDS was detected in the influent, mid-point, and effluent samples at concentrations of 110 mg/l, 116 mg/l, and 110 mg/l, respectively.
- TSS was not detected in any of the sample ports. The influent, mid-point, and effluent samples were all below the laboratory method detection limit of 1.0 mg/l.

3.6 Recovery System Pumping Rates

The average flow rates of the GWACS are summarized in Table 3. The GWACS extracted, treated and recharged approximately 44 million gallons of groundwater during the five month period ending November 1998.

3.7 Summary

The GWACS at the Lenox facility was installed in December 1991 and it has recovered, treated, and discharged over 620 million gallons since system startup. Groundwater elevation measurements made during the past five years shows that the zone of influence created by the recovery system exceeds the width of the TCE plumes.

The area that contained the highest concentrations of TCE (greater than 1,000 $\mu\text{g/l}$) in the north plume was intercepted by the recovery system, and the TCE contour maps show that the remaining areas of elevated TCE concentrations in the plumes are moving towards the recovery wells. The contour maps show that the areas of highest TCE concentration in both plumes have been reduced significantly from the concentrations existing prior to system startup.

The effectiveness of the GAC system has been demonstrated by the fact that the TCE concentrations are usually reduced to less than the laboratory detection limit before the water enters the second vessel. The removal percentage is shown in Table 1.

**LENOX CHINA FACILITY AND ADJACENT AREA
POMONA, NEW JERSEY**

TABLE 1

GAC TREATMENT SYSTEM SAMPLING RESULTS, OCTOBER 1998

Sample ID	Permit	PO-GAC-INF	PO-GAC-MID	PO-GAC-EFF	Percent
Sample Date	Limits	10/8/98	10/8/98	10/8/98	Removal
Parameter					
<i>Volatile Organic Compounds (µg/l)</i>					
Trichloroethene	1.0	21.0	< 0.32	< 0.32	98.4%*
1,1-Dichloroethene	2.0	< 0.22	< 0.22	< 0.22	NA
cis-1,2-Dichloroethene	2.0	0.25	0.43	< 0.1	85.3%
trans-1,2-Dichloroethene	2.0	< 0.16	< 0.16	< 0.16	NA
Vinyl chloride	5.0	< 0.25	< 0.25	< 0.25	NA
<i>Metals (µg/l)</i>					
Iron (Unfiltered)	NL	1,800	20	30	NA
Iron (Filtered)	NL	30	< 10	< 10	NA
Lead (Unfiltered)	NL	3.0	2.0	< 1.0	NA
Lead (Filtered)	NL	2.0	< 1.0	< 1.0	NA
Zinc (Unfiltered)	NL	620	20	80	NA
Zinc (Filtered)	NL	50	10	20	NA
TDS (mg/l)	NL	110	116	110	NA
TSS (mg/l)	NL	< 1	< 1	< 1	NA

NOTES:

µg/l - Micrograms per liter

mg/l - Milligrams per liter

NA - Not Applicable

NL - No Limit

< - Less than

NS - Not analyzed

* - Results less than the laboratory minimum detection limit were considered to be one half the minimum detection limit

Values in bold font exceed the site specific Groundwater Quality Criteria (GWQC).

LENOX CHINA FACILITY AND ADJACENT AREA
POMONA, NEW JERSEY

TABLE 2

SUMMARY OF TRICHLOROETHENE REMEDIATION SYSTEM
RESULTS, DECEMBER 1991 TO DECEMBER 1998

Date Sampled	GAC Influent	GAC Mid-Vessel	GAC Effluent
12/24/91	NA	NA	< 0.03
2/18/92	NA	NA	< 0.50
3/20/92	NA	NA	< 0.50
4/9/92	NA	NA	< 0.50
5/29/92	NA	NA	< 0.50
6/12/92	4.30	< 0.50	< 0.50
7/10/92	44.00	< 0.50	< 0.50
8/14/92	4.00	< 0.50	< 0.50
9/11/92	44.00	< 0.50	< 0.50
9/18/92	NA	< 0.50	NA
10/7/92	44.00	< 0.50	< 0.50
10/16/92	NA	< 0.50	NA
11/20/92	0.50	< 0.50	< 0.50
12/9/92	NA	< 0.50	NA
1/7/93	NA	< 0.50	NA
1/27/93	47.00	< 0.50	< 0.50
2/19/93	< 0.50	< 0.50	< 0.50
3/12/93	44.00	0.65	< 0.50
3/26/93	NA	< 0.50	NA
4/2/93	NA	< 0.50	NA
4/27/93	41.00	< 0.50	< 0.50
5/21/93	4.80	1.70	< 0.50
5/28/93	38.00	2.00	< 0.50
6/23/93*	47.00	3.50	< 0.50
8/25/93	35.00	< 0.50	< 0.50
11/11/93	32.00	< 0.50	0.065J
2/17/94	37.00	< 0.50	< 0.50
5/10/94	34.00	1.30	< 0.50
8/12/94*	27.00	3.60	< 0.19
11/16/94	32.00	< 0.19	< 0.19
2/10/95	35.00	< 0.19	< 0.19
5/12/95	32.00	0.33	< 0.19
8/10/95*	26.00	2.50	< 0.19
11/9/95	37.90	< 0.19	< 0.19
2/9/96	35.60	NS	< 0.19
4/22/96	31.60	NS	< 0.20
7/10/96	15.80	0.52	< 0.20
10/9/96	33.70	0.76	< 0.20
1/15/97*	24.30	0.80	< 0.20
4/9/97	28.80	< 0.20	< 0.20
5/8/97	26.00	< 0.37	< 0.37
6/5/97	19.10	< 0.37	< 0.37
7/16/97	22.00	< 0.37	< 0.37
8/20/97	11.00	< 0.37	< 0.37
9/10/97	46.00	< 0.37	< 0.37
10/9/97	52.00	< 0.37	< 0.37
11/5/97	46.00	< 0.37	< 0.37
12/5/97	37.00	0.55	< 0.37
1/8/98	34.00	0.93	< 0.37
2/4/98	43.33	1.85	< 0.32
3/4/98	53.00	2.30	< 0.32
21-Apr	29.00	< 0.32	< 0.32
5/6/98	24.00	< 0.32	< 0.32
6/4/98	30.00	< 0.32	< 0.32
7/16/98	20.00	< 0.32	< 0.32
8/5/98	21.00	< 0.32	< 0.32
9/17/98	26.00	< 0.32	< 0.32
10/8/98	21.00	< 0.32	< 0.32
11/4/98	20.00	< 0.32	< 0.32
12/10/98	24.00	< 0.32	< 0.32

Notes:

NA - Not Analyzed

< - Less Than

NS - Not Sampled

GAC - Granular Activated Carbon

All concentrations are presented in micrograms per liter (ug/l)

* - GAC beds were changed in Aug. 1993, 1994, 1995, Feb. 1997 and Apr. 1998

**LENOX CHINA FACILITY AND ADJACENT AREA
POMONA, NEW JERSEY**

TABLE 3

GROUNDWATER CORRECTIVE ACTION UNIT SYSTEM FLOW RATES

Month	Average Flow Gal/Day	Maximum Flow Gal/Day
January	266,174	310,909
February	277,594	336,886
March	265,396	308,871
April	221,100	268,621
May	202,733	231,300
June	179,010	227,733
July	213,160	232,044
August	220,803	258,850
September	249,583	262,700
October	242,528	258,633
November	243,623	243,623
December		

4.0 DEPTH TO WATER AND GROUNDWATER ELEVATIONS (DGW)

The October 4, 1998 groundwater elevation data are summarized in Table 1. Depth to water at the shallow wells on the south side of the plant and at the wells on the north side of the plant which screen the same interval as the recovery wells were used to develop the groundwater elevation map (Figure 1). The groundwater flow direction is northeast, which is consistent with previous measurements. The contours show a zone of influence created by the recovery wells which extends to the White Horse Pike monitoring wells.

Depth to water measurements made October 4, 1998 at the well points installed downgradient of the recovery wells were plotted to develop the groundwater elevation and groundwater flow direction maps shown on Figures 3 and 4.

**LENOX CHINA FACILITY AND ADJACENT AREA
POMONA, NEW JERSEY**

TABLE 1

WATER LEVEL MEASUREMENTS, OCTOBER 4, 1998

Well No.	Measuring Point Elevation (ft. above mean sea level)	Depth to Water (ft. below MP)	Water Level Elevation (ft. above mean sea level)
P1	65.69	10.23	55.46
P1A	66.32	10.13	56.19
P1B	66.34	10.16	56.18
P5	66.74	10.91	55.83
P5A	66.74	8.86	57.88
P8A	70.02	13.68	56.34
P8B	70.07	13.31	56.76
P9A	70.90	14.85	56.05
P9B	70.97	14.93	56.04
P9C	71.31	15.09	56.22
MW1	69.28	13.19	56.09
MW3	67.09	11.73	55.36
MW4	66.98	11.23	55.75
MW5	64.17	10.25	53.92
MW6	65.08	10.58	54.50
MW7	67.31	12.34	54.97
MW8	67.16	11.68	55.48
MW9	69.51	14.67	54.84
MW10	63.51	9.12	54.39
MW11	63.05	9.61	53.44
MW12D	62.89	9.31	53.58
MW12S	62.62	9.01	53.61
MW13	64.66	10.75	53.91
MW14D	63.63	9.59	54.04
MW14S	63.64	9.59	54.05
MW15	66.07	10.98	55.09
MW16	62.07	8.80	53.27
MW17	62.09	8.64	53.45
MW23	61.49	8.36	53.13
MW23A	61.78	8.76	53.02
MW24	62.60	9.46	53.14
MW25	61.13	8.12	53.01
MW25A	61.29	8.23	53.06
MW25B	61.22	8.19	53.03
MW26A (B30A)	62.48	9.57	52.91
MW26B (B30B)	61.65	8.75	52.90
MW72	64.19	10.03	54.16
MW73	63.06	8.87	54.19
MW74	62.56	8.43	54.13
MW75	60.15	7.50	52.65
MW76	60.60	8.04	52.56
MW77	60.41	7.65	52.76
MW78	59.84	6.99	52.85
MW79A	60.51	7.50	53.01
MW80	62.49	7.70	54.79
MW81	61.90	8.39	53.51
B31	62.19	9.40	52.79
B32	63.29	10.45	52.84
B53	62.31	8.76	53.55
B54	62.39	8.81	53.58
B59	60.02	7.48	52.54
B66	61.71	9.01	52.70
B66A	61.60	8.75	52.85
B66B	61.86	9.01	52.85
B67	62.29	9.61	52.68
B70A	61.39	8.19	53.20
B71	62.31	9.56	52.75
PZ1S	60.27	7.55	52.72
PZ1D	60.52	8.00	52.52
PZ2S	60.52	7.79	52.73
PZ2D	60.70	8.09	52.61
PZ3S	61.47	8.78	52.69
PZ3D	61.60	8.92	52.68
PZ4S	60.80	8.05	52.75
PZ4D	61.09	8.39	52.70
PZ5S	60.47	7.61	52.86
PZ5D	60.56	7.86	52.70
PZ6S	60.79	7.99	52.80
PZ6D	60.73	7.96	52.77

NM - Not Measured (could not remove cap)

ALL VALUES MEASURED IN FEET

5.0 TCE MONITORING PROGRAM (MOA)

5.1 Background

A groundwater investigation performed at the Lenox China facility between January 1987 and February 1990 by Geraghty & Miller (G&M) identified two TCE plumes emanating from an antecedent drum storage pad and degreaser sump. Both antecedent waste handling areas are no longer in use. A second on-site degreaser sump was removed from service in June 1993. Lenox initiated a quarterly groundwater monitoring program to delineate and track the TCE plumes identified by G&M. The monitoring results were also used to design the GWACS.

5.2 Field Procedures

Groundwater samples were collected from 15 monitoring wells at the Lenox facility and along White Horse Pike on October 6, 7, and 8, 1998.

All sampling was performed in accordance with the most recently revised (April 1996) Groundwater Sampling and Analysis Plan and Supplemental Groundwater Sampling, Analysis, and Monitoring Plan approved by the NJDEP.

Lenox installed a 3/4 inch I.D. pump column attached to a one foot section of well screen in each well used to monitor the TCE remediation system prior to the May 1993 sampling round. The bottom of the pump column screen was set approximately two feet above the top of the well screen to ensure that the total volume of standing water in the well casing was removed during purging. A peristaltic pump was attached to the top of the pump column using drinking water grade polyethylene tubing to purge each well. Three to five volumes of standing water were removed from each well and field parameters (pH,

specific conductivity, temperature, and dissolved oxygen) were monitored while the well was purged. The field parameter data are shown on the well sampling logs in Appendix A. Filtered and unfiltered samples for metals analysis were collected directly from the discharge of the peristaltic pump. New drinking water grade polyethylene tubing was used to purge and sample each well to avoid cross-contamination. Samples for VOC analysis were collected with 60 cc teflon bailers dedicated to each well.

Unfiltered samples were analyzed for VOCs (USEPA Method 502.2), iron, zinc, lead, total dissolved solids (TDS) and total suspended solids (TSS). Filtered samples were analyzed for iron, zinc, and lead. Field blank and duplicate samples were collected during the monitoring program and trip blanks supplied by the laboratory were analyzed for quality assurance purposes. All analyses were performed by Accutest, Dayton, New Jersey (NJDEP Certification No. 12129).

5.3 Groundwater Monitoring Results

The groundwater analytical data are summarized in Tables 1 through 3 and the extent of TCE in groundwater during the October 1998 monitoring round is shown on Figure 2. The laboratory data reports are included in Appendix C.

The October 1998 monitoring round results are summarized below:

- TCE concentration increased slightly in monitoring wells MW-15, B-31, MW-77, and MW-78. The largest increase in TCE concentrations was found in B-31 (3.8 µg/l to 6.9 µg/l).

- TCE concentrations decreased in MW-10, MW-13, MW-25, B-59, MW-75, MW-79A, and MW-81. The largest decrease in TCE concentrations was found in MW-25 (17.4 µg/l to 5.7 µg/l).
- TCE remained below the 0.20 µg/l reporting limit in MW-1, MW12S, MW-76, and MW-80.
- Unfiltered samples contained iron at concentrations ranging from less than the laboratory method detection limit of 0.1 to 3.18 mg/l. Iron was detected at the highest concentration in a unfiltered sample collected from well MW-10. Filtered samples contained iron at concentrations ranging from less than the laboratory method detection limit of 0.1 mg/l to 0.538 mg/l. Iron was detected at the highest concentration in a filtered sample collected from well MW-10.
- Unfiltered samples contained lead at concentrations ranging from less than the laboratory method detection limit of 0.003 to 0.0031 mg/l. Lead was detected at the highest concentration in an unfiltered sample collected from well B-31. All of the filtered samples contained lead at concentrations less than the laboratory method detection limit of 0.003 mg/l.
- Unfiltered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 0.02 to 0.0638 mg/l. Zinc was detected at the highest concentration in an unfiltered sample collected from well B-31. Filtered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 0.02 to 0.0467 mg/l. Zinc was detected at the highest concentration in a filtered sample collected from well MW-25.

- TDS was detected at concentrations ranging from 38 mg/l to 262 mg/l, and TSS was detected at concentrations ranging from less than the laboratory method detection limit of 4 mg/l to 88 mg/l. TDS and TSS detected at highest concentrations in samples collected from wells MW-76 and MW-1, respectively.
- Analyte concentrations in the duplicate sample from monitoring well MW-25 were in good agreement for VOCs, lead, zinc, and iron. VOCs were not detected in the trip and field blank samples. Zinc was detected in the unfiltered field blank collected on October 6 at a concentration of 0.0258 mg/l. Zinc was detected in the filtered field blank collected on October 6 at a concentration of 0.0314 mg/l. Iron, lead, TDS, and TSS were not detected in the field blank samples.

TCE concentrations in samples from the White Horse Pike wells were generally consistent with the concentrations found during the previous monitoring rounds.

**LENOX CHINA FACILITY AND ADJACENT AREAS
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TABLE 2

INORGANIC PARAMETER CONCENTRATIONS, OCTOBER 1998 SAMPLING ROUND

Sample ID Well No. Date	PO-MW-1 MW-1 10/5/98	PO-MW-10 MW-10 10/5/98	PO-GW-MW-12S MW-12S 10/6/98	PO-GW-MW-12D MW-12D	PO-GW-MW-13 MW-13 10/6/98	PO-GW-MW-23 MW-23	PO-GW-MW-15 MW-15	PO-GW-MW-D MW-25 (DUP) 10/6/98
Analyte								
Iron (Unfiltered)	1.640	3.180	<0.100	NS	<0.100	NS	1.820	< 0.100
Iron (Filtered)	0.438	0.538	<0.100	NS	<0.100	NS	< 0.100	< 0.100
Lead (Unfiltered)	0.0030	<0.003	<0.003	NS	<0.003	NS	< 0.003	< 0.003
Lead (Filtered)	<0.003	<0.003	<0.003	NS	<0.003	NS	< 0.003	< 0.003
Zinc (Unfiltered)	< 0.020	< 0.020	< 0.020	NS	<0.020	NS	0.0290	0.0546
Zinc (Filtered)	< 0.020	< 0.020	0.0248	NS	<0.020	NS	0.0344	0.0475
TDS (mg/L)	71.0	222	225	NS	236	NS	171	87.0
TSS (mg/L)	88.0	14.0	<4.0	NS	<4.0	NS	<4.0	<4.0

Notes:

All concentrations are presented in milligrams per liter (mg/l)

(mg/l) - milligrams per liter

< = Less Than

NS - Not Sampled

Values in **bold font** exceed the site specific Groundwater Quality Criteria (GWQC).

TABLE 2 Continued . . .

Sample ID Well No. Date	PO-GW-MW-25 MW-25 10/6/98	PO-GW-B-31 B-31 10/7/98	PO-GW-B-32 B-32	PO-GW-B-53 B-53	PO-GW-B-54 B-54	PO-GW-B-59 B-59 10/7/98	PO-GW-B-66 B-66	PO-GW-B-71 B-71
Analyte								
Iron (Unfiltered)	<0.100	0.244	NS	NS	NS	<0.100	NS	NS
Iron (Filtered)	<0.100	<0.100	NS	NS	NS	<0.100	NS	NS
Lead (Unfiltered)	<0.003	0.0031	NS	NS	NS	<0.003	NS	NS
Lead (Filtered)	<0.003	<0.003	NS	NS	NS	<0.003	NS	NS
Zinc (Unfiltered)	0.0443	0.0638	NS	NS	NS	<0.020	NS	NS
Zinc (Filtered)	0.0467	0.0366	NS	NS	NS	<0.020	NS	NS
TDS (mg/L)	42.0	110	NS	NS	NS	75.0	NS	NS
TSS (mg/L)	<4.0	<4.0	NS	NS	NS	41.0	NS	NS

Notes:

All concentrations are presented in milligrams per liter (mg/l)

(mg/l) - milligrams per liter

< = Less Than

NS - Not Sampled

Values in **bold font** exceed the site specific Groundwater Quality Criteria (GWQC).

TABLE 2 Continued . . .

Sample ID Well No. Date	PO-GW-MW-75 MW-75 10/7/98	PO-GW-MW-76 MW-76 10/7/98	PO-GW-MW-77 MW-77 10/7/98	PO-GW-MW-78 MW-78 10/7/98	PO-GW-MW-79A MW-79A 10/7/98	PO-GW-MW-80 MW-80 10/6/98	PO-GW-MW-81 MW-81 10/7/98
Analyte							
Iron (Unfiltered)	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Iron (Filtered)	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Lead (Unfiltered)	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Lead (Filtered)	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zinc (Unfiltered)	0.0290	0.0291	0.0210	<0.020	<0.020	0.0324	0.0244
Zinc (Filtered)	<0.020	0.0329	0.0242	<0.020	0.0218	0.031	0.0213
TDS (mg/l)	78.0	262	38.0	38.0	46.0	88.0	60
TSS (mg/l)	<4.0	4.0	<4.0	<4.0	<4.0	<4.0	<4.0

Notes:

All concentrations are presented in milligrams per liter (mg/L)

< = Less Than

NS - Not Sampled

Values in bold font exceed the site specific Groundwater Quality Criteria (GWQC).

**LENOX CHINA FACILITY AND ADJACENT AREAS
POMONA, NEW JERSEY**

TABLE 3

QUALITY ASSURANCE / QUALITY CONTROL SAMPLES, OCTOBER 1998 SAMPLING ROUND

Sample ID Sample Matrix Date	PO-GW-FB1 Field Blank 10/5/98	PO-GW-FB2 Field Blank 10/6/98	PO-GW-FB3 Field Blank 10/7/98	TB Trip Blank 10/5/98	TB Trip Blank 10/6/98	Trip Blank Trip Blank 10/7/98
Analyte						
Trichloroethene (ug/L)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Iron (Unfiltered)	NA	<0.100	<0.100	NA	NA	NA
Iron (Filtered)	NA	<0.100	<0.100	NA	NA	NA
Lead (Unfiltered)	NA	<0.003	<0.003	NA	NA	NA
Lead (Filtered)	NA	<0.003	<0.003	NA	NA	NA
Zinc (Unfiltered)	NA	0.0258	<0.020	NA	NA	NA
Zinc (Filtered)	NA	0.0314	<0.020	NA	NA	NA
Total Dissolved Solids	<10	<10	<10	NA	NA	NA
Total Suspended Solids	<4.0	<4.0	<4.0	NA	NA	NA

All concentrations are presented in milligrams per liter (mg/L), unless noted

< = Less Than

ug/L = Micrograms per liter

NA = Not Analyzed

Values in bold font exceed the site specific Groundwater Quality Criteria (GWQC).

6.0 SWMU No. 2 AND AREA OF CONCERN MONITORING PROGRAM (MOA)

6.1 Groundwater Monitoring Results

Groundwater samples were collected from monitoring wells MW-10, MW-72, MW-73, and MW-74 to assess groundwater quality downgradient of Solid Waste Management Unit (SWMU) No. 2 and the Area of Concern (AOC). Unfiltered and filtered samples were analyzed for lead and zinc. The groundwater analytical data are summarized in Table 1. The laboratory data reports are included in Appendix C.

The October 1998 monitoring round results for SWMU No. 2 and AOC are summarized below:

- Unfiltered samples contained lead at concentrations ranging from less than the laboratory method detection limit of 0.003 mg/l to 0.1330 mg/l. Lead was detected at the highest concentration in the unfiltered sample collected from well MW-73. Filtered samples contained lead at concentrations ranging from less than the laboratory method detection limit of 0.003 mg/l to 0.0033 mg/l. Lead was detected at the highest concentration in the filtered sample collected from MW-73.
- Unfiltered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 0.020 mg/l to 0.0958 mg/l. Filtered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 0.020 mg/l to 0.1090 mg/l. Zinc was detected at the

highest concentration in both the filtered and unfiltered sample collected from MW-17.

LENOX CHINA FACILITY AND ADJACENT AREAS
POMONA, NEW JERSEY

TABLE 1

INORGANIC PARAMETER CONCENTRATIONS, OCTOBER 1998 SAMPLING ROUND

Sample ID Well No. Date	PO-MW-10 MW-10 10/5/98	PO-GW-MW-17 MW-17 10/6/98	PO-GW-MW-72 MW-72 10/5/98	PO-GW-MW-73 MW-73 10/5/98	PO-GW-MW-74 MW-74 10/5/98
Analyte					
Lead (Unfiltered)	<0.003	<0.003	0.015	0.1330	0.0146
Lead (Filtered)	<0.003	<0.003	<0.003	0.0033	<0.003
Zinc (Unfiltered)	< 0.020	0.0958	0.0333	0.0812	0.0680
Zinc (Filtered)	< 0.020	0.1090	< 0.020	0.0326	0.0560

Notes:

All concentrations are presented in milligrams per liter (mg/L)

< = Less Than

Values in **bold** font exceed the site specific Groundwater Quality Criteria (GWQC).

7.0 CLASSIFICATION EXCEPTION AREA / STATISTICAL ANALYSIS PROGRAM

(MOA)

Groundwater samples were collected from MW-1, MW-3F, MW-6F, MW-13, MW-73, MW-74, MW-75, MW-79A to assess groundwater quality downgradient of the Lenox facility. Unfiltered and filtered samples were analyzed for lead and zinc. The groundwater analytical results are summarized in Table 1. The laboratory data reports are included in Appendix C.

The October 1998 monitoring round results for the CEA/Statistical Analysis Program are summarized below:

- Unfiltered samples contained lead at concentrations ranging from less than the laboratory method detection limit of 0.003 mg/l to 0.133 mg/l. Lead was detected at the highest concentration in the unfiltered sample collected from well MW-73. Filtered samples contained lead at concentrations ranging from less than the laboratory method detection limit of 0.003 mg/l to 0.0034 mg/l. Lead was detected at the highest concentration in the filtered sample collected from well MW-3F.
- Unfiltered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 0.02 to 0.0812 mg/l. Zinc was detected at the highest concentration in an unfiltered sample collected from MW-73. Filtered samples contained zinc at concentrations ranging from less than the laboratory method detection limit of 0.02 to 0.0560 mg/l. Zinc was detected at the highest concentration in a filtered sample collected from well MW-74.

**LENOX CHINA FACILITY AND ADJACENT AREAS
POMONA, NEW JERSEY**

TABLE 1

INORGANIC PARAMETER CONCENTRATIONS, OCTOBER 1998 SAMPLING ROUND

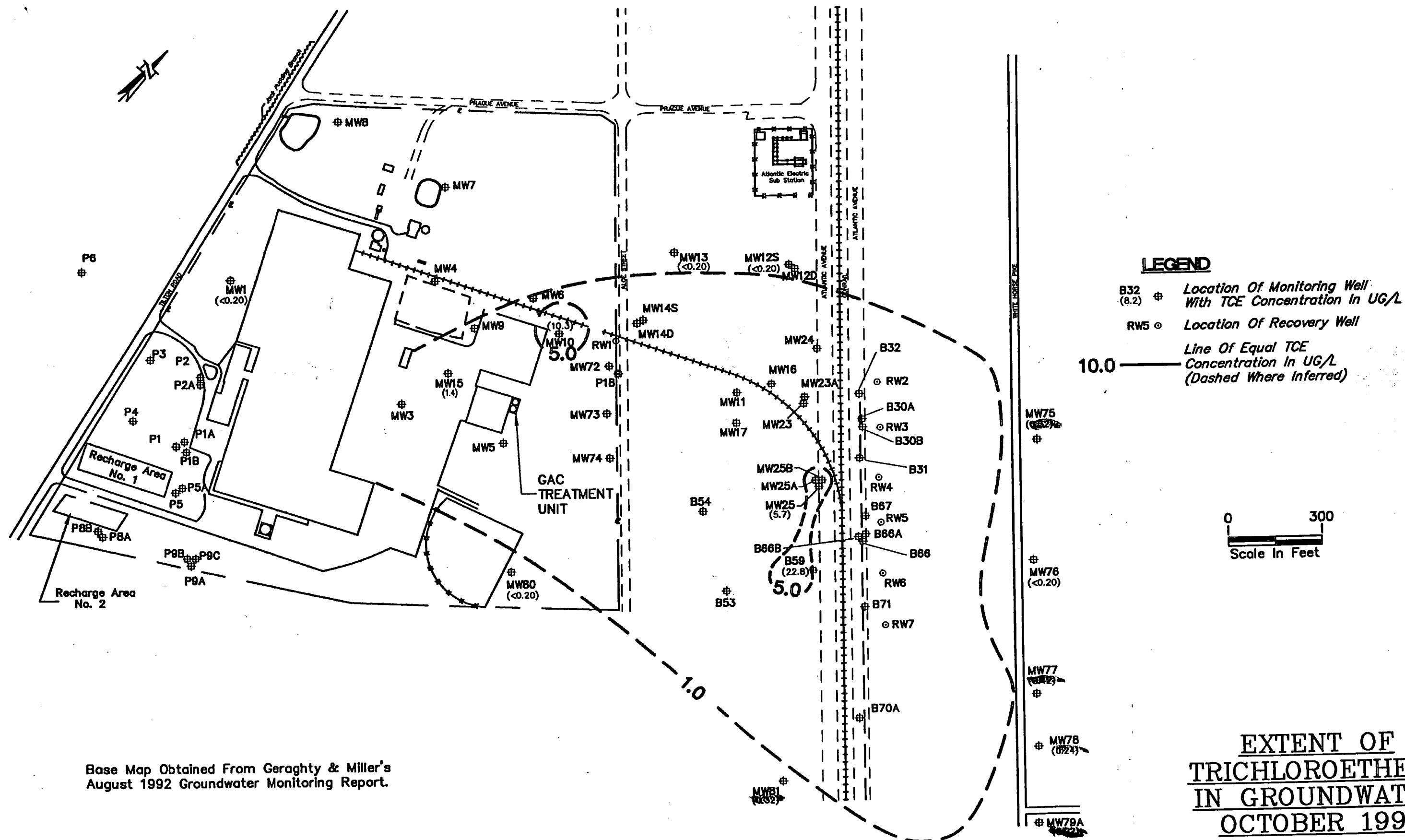
Sample ID Well No. Date	PO-MW-1 MW-1 10/5/98	PO-GW-MW-3F MW-3F 10/6/98	PO-GW-MW-6F MW-6F 10/6/98	PO-GW-MW-12S MW-12S 10/6/98	PO-GW-MW-13 MW-13 10/6/98	PO-GW-MW-73 MW-73 10/5/98	PO-GW-MW-74 MW-74 10/5/98	PO-GW-MW-75 MW-75 10/7/98	PO-MW-79A MW-79A 10/7/98
Analyte									
Lead (Unfiltered)	0.0030	0.0036	<0.003	<0.003	<0.003	0.133	0.0146	<0.003	<0.003
Lead (Filtered)	<0.003	0.0034	<0.003	<0.003	<0.003	0.0033	<0.003	<0.003	<0.003
Zinc (Unfiltered)	< 0.020	<0.020	<0.020	< 0.020	<0.020	0.0812	0.0680	0.0290	<0.020
Zinc (Filtered)	< 0.020	<0.020	<0.020	0.0248	<0.020	0.0326	0.0560	<0.020	0.0218

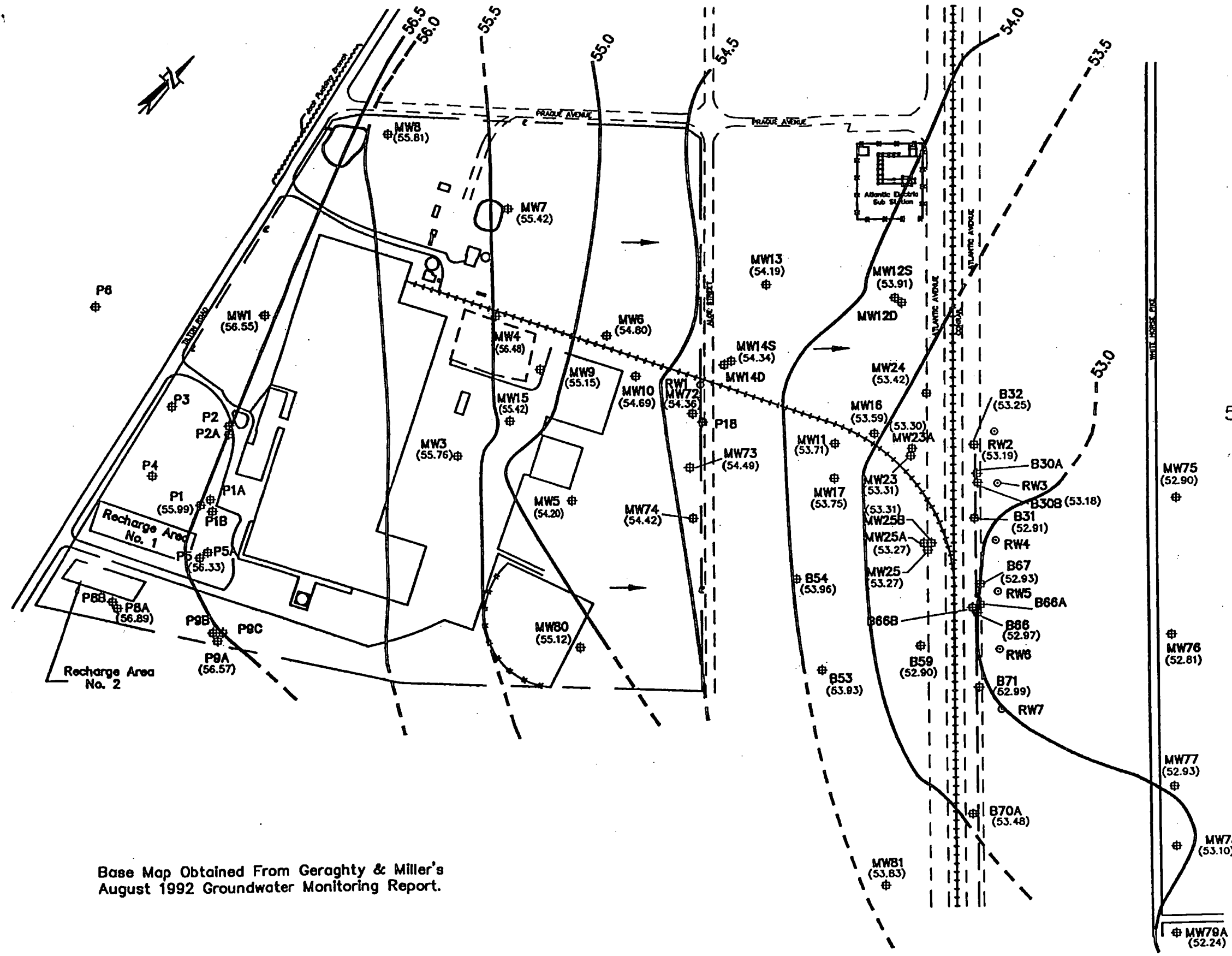
Notes:

All concentrations are presented in milligrams per liter (mg/L)

< = Less Than

Values in **bold** font exceed the site specific Groundwater Quality Criteria (GWQC).





LEGEND

B66 # Location Of Monitoring Well With Groundwater Elevation

RW5 o Location Of Recovery Well

55.0 — Line Of Equal Water-Level Elevation Above Feet MSL (Dashed Where Inferred)

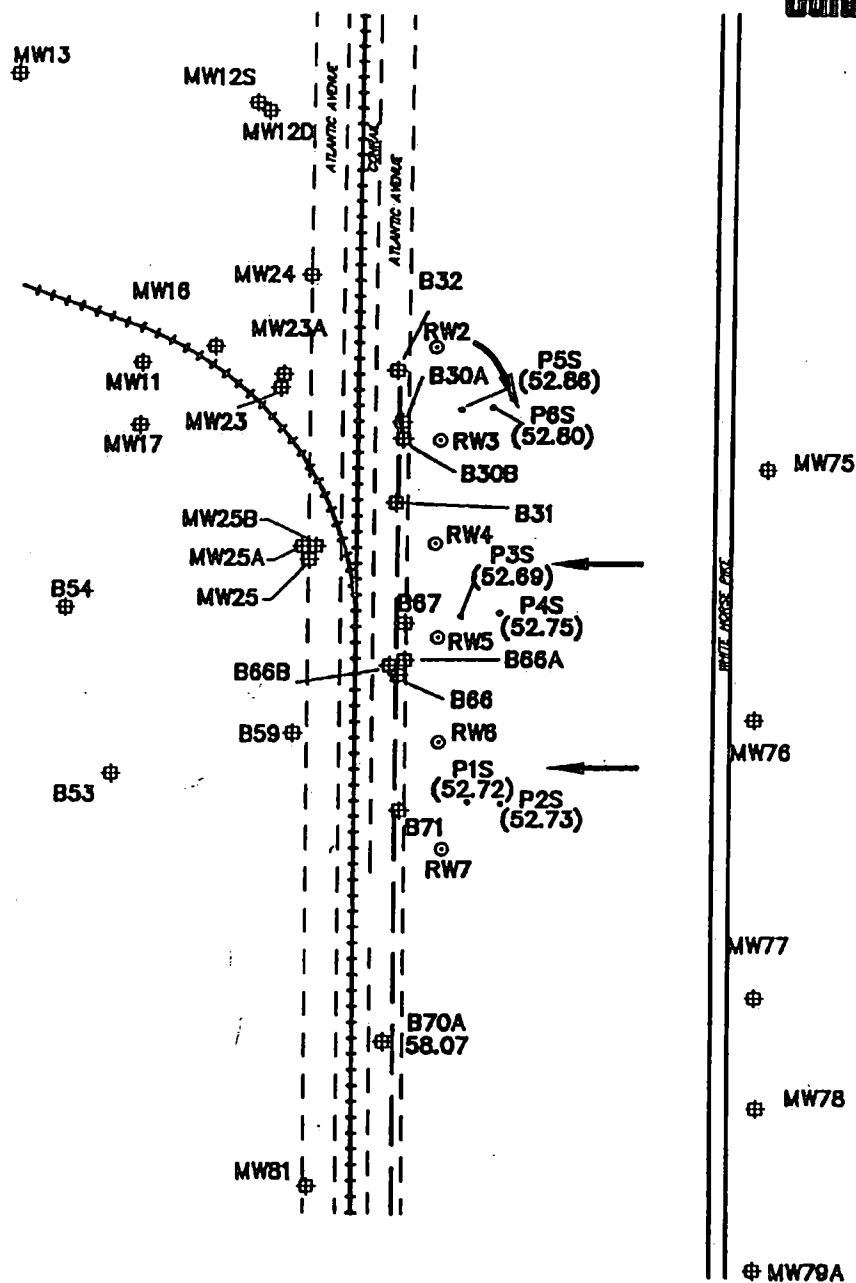
→ Groundwater Flow Direction

0 300
Scale In Feet

Base Map Obtained From Geraghty & Miller's August 1992 Groundwater Monitoring Report.

**GROUNDWATER
ELEVATIONS AND
GROUNDWATER FLOW
SEPTEMBER 1998**

LENOX CHINA
POMONA, NEW JERSEY



0 300
Scale In Feet

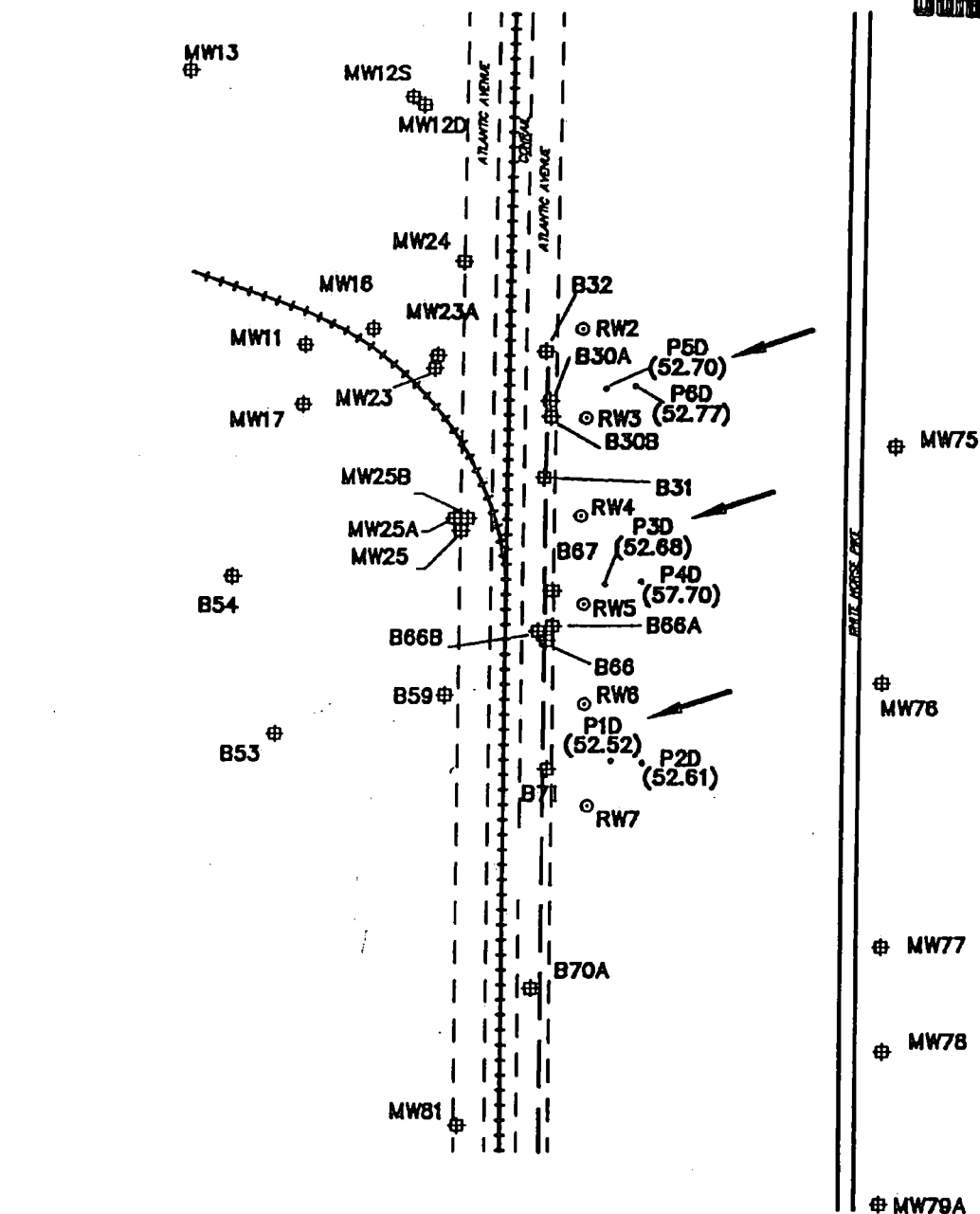
LEGEND

- PS1. LOCATION OF WELL POINT
- B65 LOCATION OF MONITORING WELL
- RW5 LOCATION OF RECOVERY WELL
- GROUNDWATER FLOW DIRECTION

Base Map Obtained From Geraghty & Miller's
August 1992 Groundwater Monitoring Report.

GROUNDWATER FLOW MAP
OCTOBER 4, 1998— SHALLOW WELLS

LENOX CHINA
POMONA, NEW JERSEY



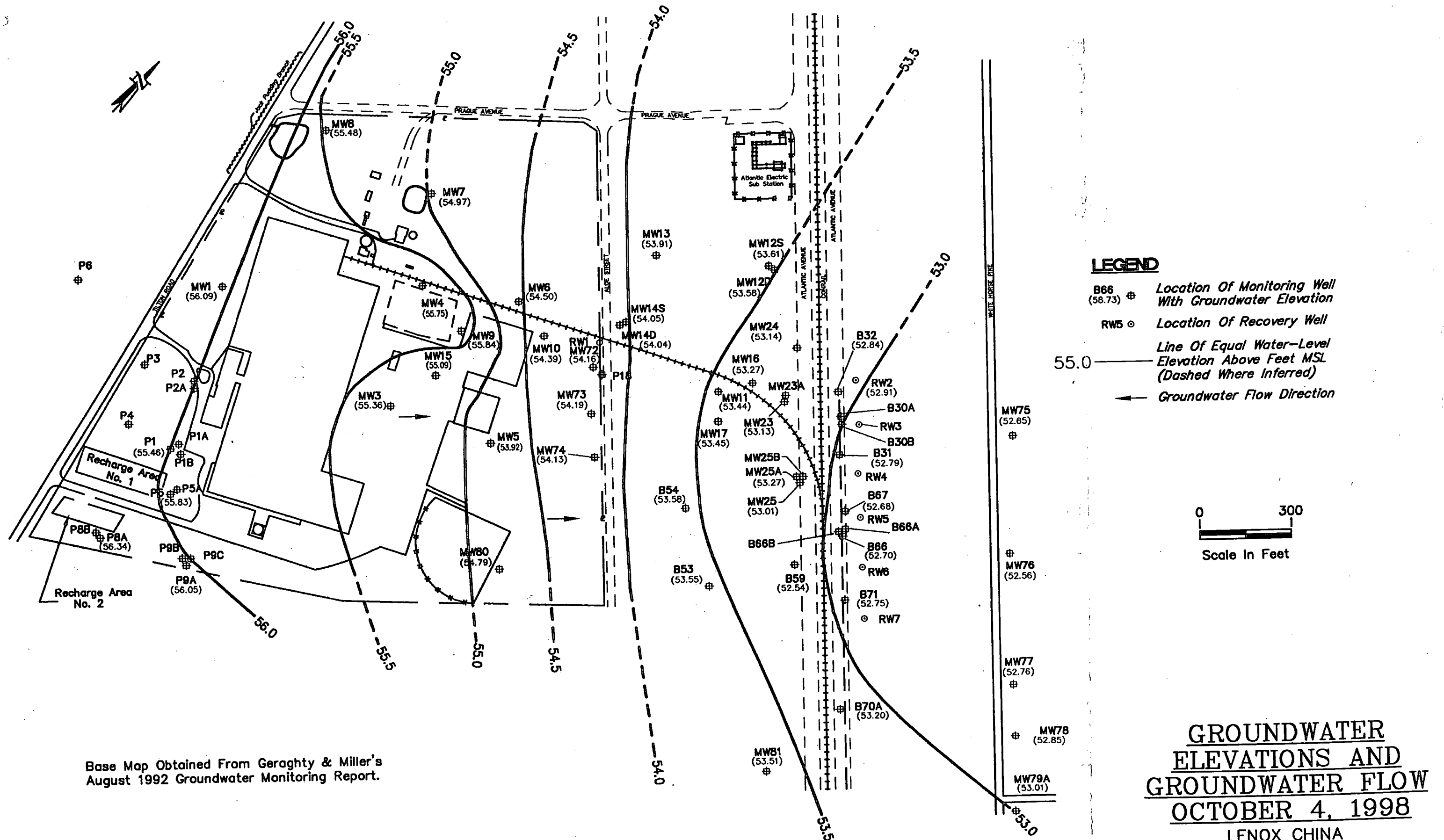
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Scale In Feet

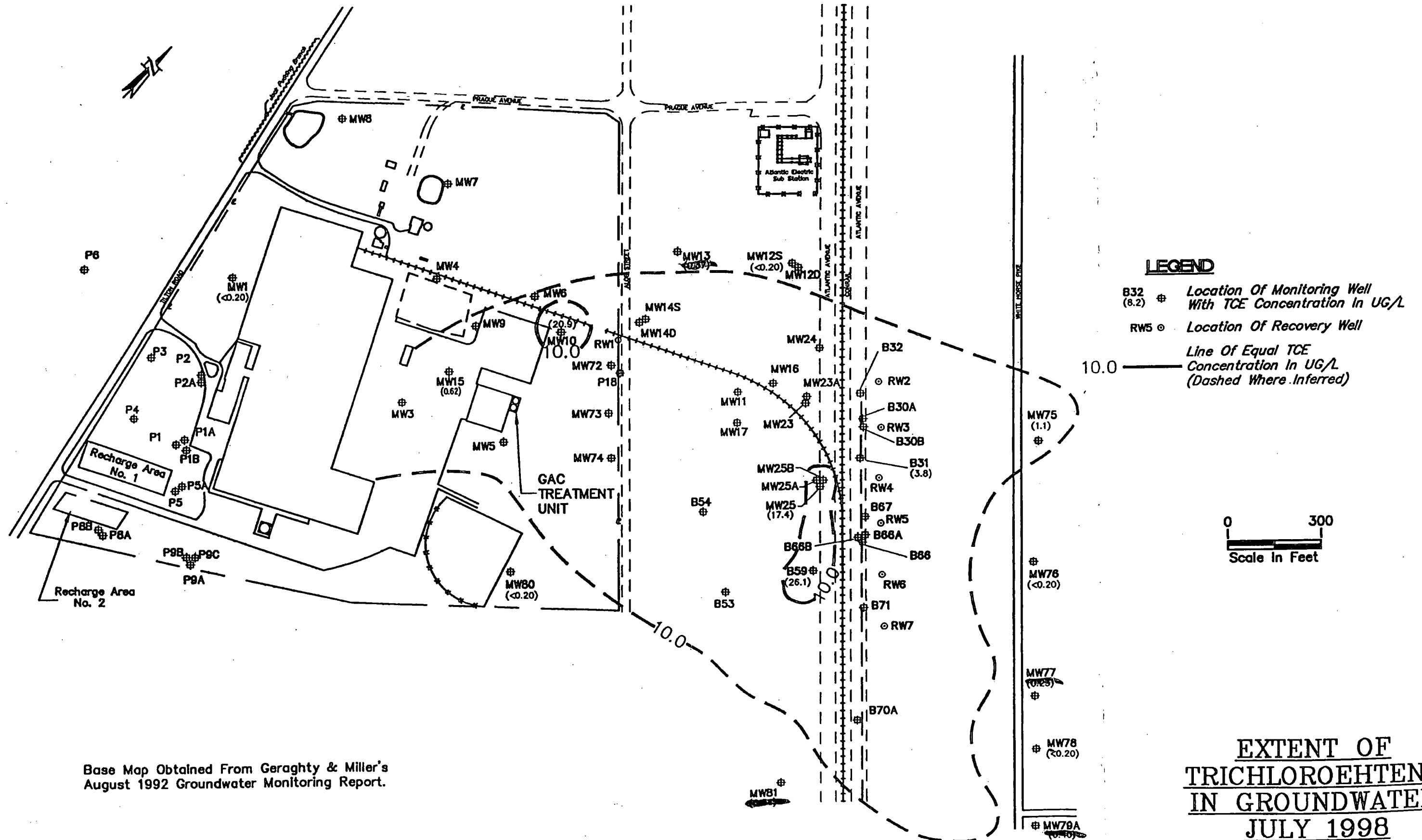
Base Map Obtained From Geraghty & Miller's
August 1992 Groundwater Monitoring Report.

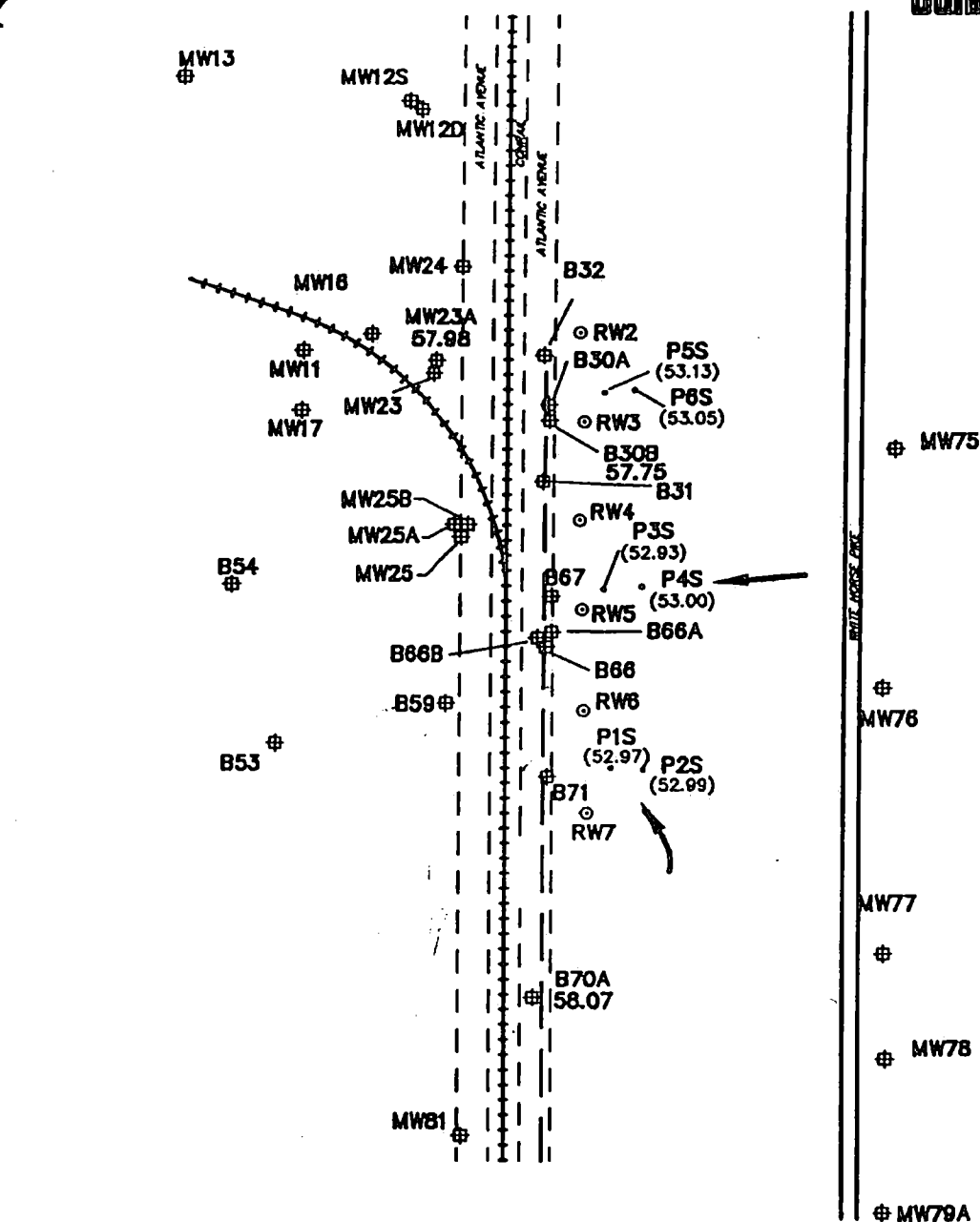
LEGEND

- PS1. LOCATION OF WELL POINT
- B65 # LOCATION OF MONITORING WELL
- RW5 o LOCATION OF RECOVERY WELL
- ← GROUNDWATER FLOW DIRECTION

GROUNDWATER FLOW MAP OCTOBER 4, 1998 – DEEP WELLS LENOX CHINA POMONA, NEW JERSEY







0 300
Scale In Feet

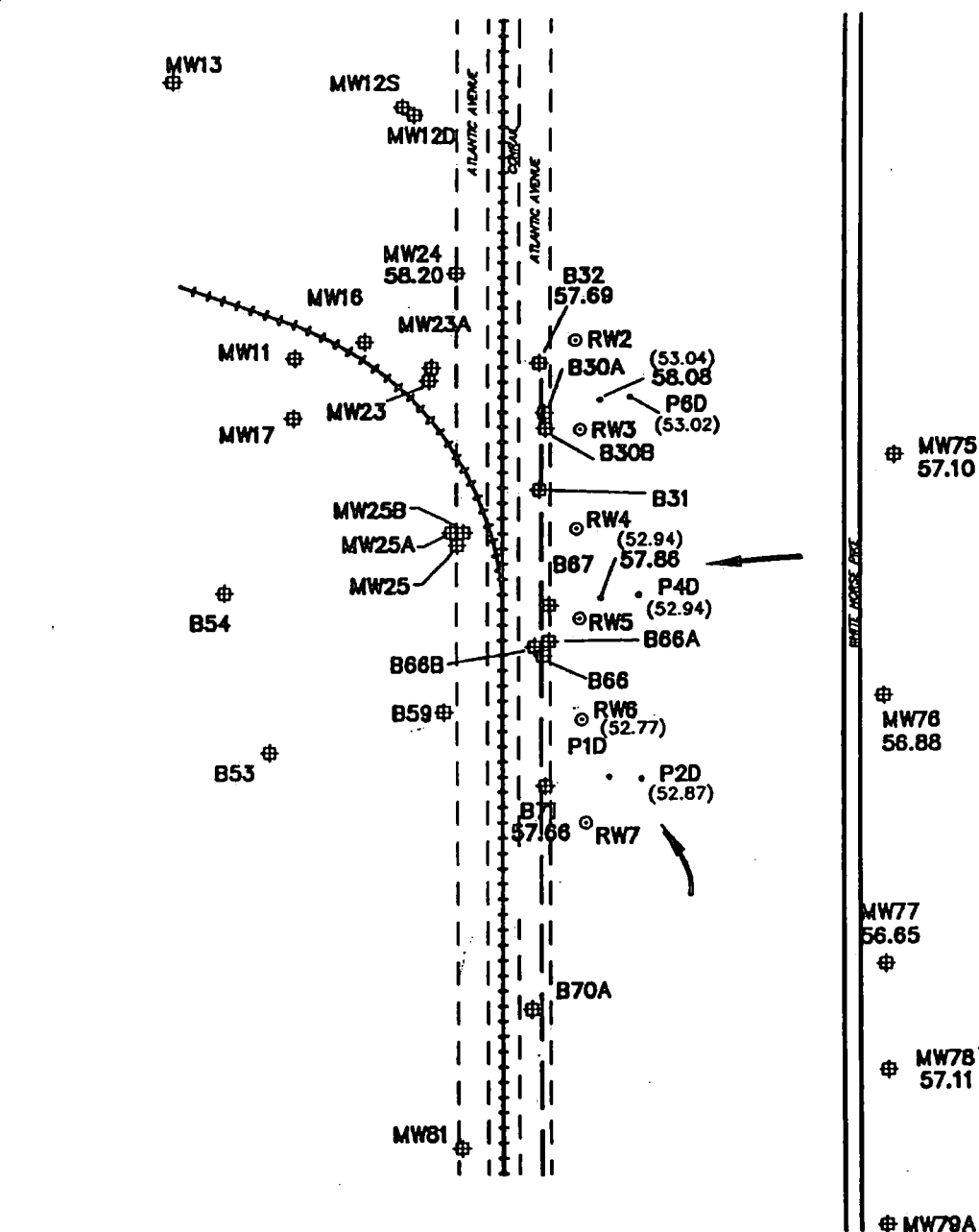
Base Map Obtained From Geraghty & Miller's
August 1992 Groundwater Monitoring Report.

LEGEND

- PS1. Location Of Well Point
- B65. Location Of Monitoring Well
- RW5. Location Of Recovery Well
- ← Groundwater Flow Direction

GROUNDWATER FLOW MAP SEPTEMBER 23, 1998 – SHALLOW WELLS

LENOX CHINA
POMONA, NEW JERSEY



0 300
Scale In Feet

Base Map Obtained From Geraghty & Miller's
August 1992 Groundwater Monitoring Report.

GROUNDWATER FLOW MAP SEPTEMBER 23, 1998— DEEP WELLS

LENOX CHINA
POMONA, NEW JERSEY